



## SNS COLLEGE OF ENGINEERING

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AN AUTONOMOUS INSTITUTION



Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

Topic: 5.1 – Integration and application of Numerical solution of ODE

**Taylor Series Method**

$y = y(x)$  is the soln of gn ODE  
then  $y(x)$  is expanded using Taylor series  
at  $x = x_0$  as

$$y(x) = y_0 + \frac{(x-x_0)}{1!} y_0' + \frac{(x-x_0)^2}{2!} y_0'' + \frac{(x-x_0)^3}{3!} y_0''' + \dots$$

**Point wise Soln.**

$$y_{m+1} = y_m + \frac{h}{1!} y_m' + \frac{h^2}{2!} y_m'' + \frac{h^3}{3!} y_m''' + \dots$$

where  $m = 0, 1, 2 \dots$